



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/603,951	06/25/2003	Philippe Armangau	EMCR:0096NPU	3116
27927	7590	08/23/2006	EXAMINER	
RICHARD AUCHTERLONIE NOVAK DRUCE & QUIGG, LLP 1000 LOUISIANA 53RD FLOOR HOUSTON, TX 77002			WILSON, YOLANDA L	
		ART UNIT	PAPER NUMBER	
		2113		

DATE MAILED: 08/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/603,951	ARMANGAU ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Yolanda L. Wilson	2113	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 13 June 2006.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-4,7-22 and 25-36 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) 7-10 and 25-28 is/are allowed.
- 6) Claim(s) 1,2,4,11-14,19,20,22 and 29-32 is/are rejected.
- 7) Claim(s) 3,15-18,21 and 33-36 is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: \_\_\_\_\_.

## FINAL DETAILED ACTION

### ***Claim Objections***

1. Claims 3,15-18,21,33-36 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Allowable Subject Matter***

2. Claims 7-10,25-28 are allowed.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1,4,11-14,19,22,29-32 are rejected under 35 U.S.C. 102(e) as being anticipated by Leach et al. (USPN 6694447 B1). As per claim 1, Leach et al. discloses in response to the primary site becoming inoperative during read/write access to the primary file system and asynchronous remote copy of changes made to the primary file system being copied to the secondary file system, beginning read/write access to the secondary file system, making a snapshot copy of the secondary file system at the

beginning of read/write access to the secondary file system, and keeping a record of changes made to the secondary file system during the read/write access to the secondary file system in column 6, line 61 – column 7, line 5.

Leach et al. also discloses thereafter, when the primary site becomes operative, using the snapshot copy to restore the primary file system to the state of the secondary file system existing when read/write access of the secondary file system was begun, and then writing into the primary file system the changes made to the secondary file system during the read/write access to the secondary file system; and terminating read/write access to the secondary file system, and once the changes made to the secondary file system have been written into the primary file system, restarting read/write access to the primary file system and asynchronous remote copy of changes made to the primary file system being copied to the secondary file system in column 7, lines 39-67. The asynchronous remote copy of changes is the point-in-time image. The servers and databases disclosed in Figure 5A are also inclusive of file systems as discloses in column 7, lines 32-38.

5. As per claim 4, Leach et al. discloses wherein the state of the secondary file system existing when read/write access of the secondary file system was begun is a prior state of the primary file system existing before the primary site became inoperative, and the method includes the primary site keeping a list of blocks that have been changed in the primary file system during read/write access to the primary file system, and the snapshot copy is used to restore the primary file system to the state of the secondary file system existing when read/write access of the secondary file system

was begun by accessing the list of blocks that have been changed in the primary file system during the read/write access to the primary file system to determine the blocks that have been changed in the primary file system since said prior state of the primary file system, and copying from the snapshot copy to the primary file system the blocks that have been changed in the primary file system since said prior state of the primary file system in column 6, lines 33-43 and column 7, lines 39-67. The other techniques are inclusive of those that store the updates to the primary site and then replicate to the secondary site.

6. As per claim 11, Leach et al. discloses accessing the list of the data blocks that have been changed in the primary file system to restore the primary file system to a prior state at a restart point, the prior state at the restart point including changes made to the primary file system that have been transmitted to the secondary site, the primary file system being restored by determining from the list the data blocks that have been changed in the primary file system since the restart point, and obtaining from the secondary site the data existing at the time of the restart point in the data blocks that have been changed in the primary file system since the restart point, and writing into the primary file system the data existing at the time of the restart point in the data blocks that have been changed in the primary file system since the restart point in column 6, lines 33-43 and column 7, lines 39-67. The other techniques are inclusive of those that store the updates to the primary site and then replicate to the secondary site. Additionally, a comparison is already being done in Leach et al. to figure out which data is update to date.

Art Unit: 2113

7. As per claim 12, Leach et al. discloses which [further] includes the secondary site responding to the disruption by making a snapshot copy of the secondary file system at the restart point once all of the changes to the primary file system that have been transmitted to the secondary file system have been written into the secondary file system, and wherein the data existing at the time of the restart point in the data blocks that have been changed in the primary file system since the restart point are obtained from the snapshot copy at secondary site in column 7, lines 39-67.

8. As per claim 13, Leach et al. discloses which further includes the secondary site activating the secondary file system for read/write access once all of the changes to the primary file system that have been transmitted to the secondary file system prior to the disruption have been written into the secondary file system in column 7, lines 39-67.

9. As per claim 14, Leach et al. discloses which further includes the secondary site responding to the disruption by activating the secondary file system for read/write access, and wherein the state of the primary file system at the restart point is the state of the secondary file system when the secondary file system is activated for read/write access in column 6, line 61 – column 7, line 5.

10. As per claim 19, Leach et al. discloses a primary data storage system and a secondary data storage system, the primary data storage system having a primary file system and the secondary data storage system having a secondary file system, the primary data storage system being programmed for read/write access to the primary file system and asynchronous remote copy of changes made to the primary file system being copied to the secondary file system in column 6, lines 19-35. The asynchronous

remote copy of changes is the point-in-time image. The servers and databases disclosed in Figure 5A are also inclusive of file systems as discloses in column 7, lines 32-38.

Leach et al. discloses wherein the secondary data storage system is programmed to respond to the primary data storage system becoming inoperative during the asynchronous remote copy of changes made to the primary file system being copied to the secondary file system by beginning read/write access to the secondary file system, making a snapshot copy of the secondary file system at the beginning of read/write access to the secondary file system, and keeping a record of changes made to the secondary file system during the read/write access to the secondary file system in column 6, line 61 – column 7, line 5.

Leach et al. discloses wherein the primary data storage system and the secondary data storage system are programmed for recovery when the primary data storage system becomes operative by using the snapshot copy to restore the primary file system to the state of the secondary file system existing when read/write access of the secondary file system was begun, and then writing into the primary file system the changes made to the secondary file system during the read/write access to the secondary file system, terminating read/write access to the secondary file system, and once the changes made to the secondary file system have been written into the primary file system, restarting read/write access to the primary file system and asynchronous remote copy of changes made to the primary file system being copied to the secondary file system in column 7, lines 39-67.

11. As per claim 22, Leach et al. discloses wherein the state of the secondary file system existing when read/write access of the secondary file system was begun is a prior state of the primary file system existing before the primary data storage system became inoperative, and wherein the primary data storage system is programmed to keep a list of blocks that have been changed in the primary file system during the read/write access to the primary file system, and to restore the primary file system to the state of the secondary file system existing when read/write access of the secondary file system was begun by accessing the list of blocks that have been changed in the primary file system during the read/write access to the primary file system to determine the blocks that have been changed in the primary file system since said prior state of the primary file system, and copying from the snapshot copy to the primary file system the blocks that have been changed in the primary file system since said prior state of the primary file system in column 6, lines 33-43 and column 7, lines 39-67. The other techniques are inclusive of those that store the updates to the primary site and then replicate to the secondary site.

12. As per claim 29, Leach et al. discloses a primary data storage system and a secondary data storage system, the primary data storage system having a primary file system and the secondary data storage system having a secondary file system, the primary data storage system being programmed for read/write access to the primary file system and asynchronous remote copy of changes made to the primary file system being copied to the secondary file system, the primary data storage system storing a list of the data blocks that have been changed in the primary file system in column 6, lines

19-35. The asynchronous remote copy of changes is the point-in-time image. The servers and databases disclosed in Figure 5A are also inclusive of file systems as discloses in column 7, lines 32-38.

Leach et al. discloses wherein the primary data storage system and the secondary data storage system are programmed for recovering from a disruption in the asynchronous remote copy of changes made to the primary file system being copied to the secondary file system by accessing the list of the data blocks that have been changed in the primary file system to restore the primary file system to a prior state at a restart point, the prior state at the restart point including changes made to the primary file system that have been transmitted to the secondary data storage system, the primary file system being restored by determining from the list the data blocks that have been changed in the primary file system since the restart point, and obtaining from the secondary data storage system the data existing at the time of the restart point in the data blocks that have been changed in the primary file system since the restart point, and writing into the primary file system the data existing at the time of the restart point in the data blocks that have been changed in the primary file system since the restart point in column 6, lines 33-43 and column 7, lines 39-67. The other techniques are inclusive of those that store the updates to the primary site and then replicate to the secondary site. Additionally, a comparison is already being done in Leach et al. to figure out which data is update to date.

13. As per claim 30, Leach et al. discloses wherein the secondary data storage system is programmed to respond to the disruption by making a snapshot copy of the

secondary file system at the restart point once all of the changes to the primary file system that have been transmitted to the secondary file system have been written into the secondary file system, and wherein the secondary file system is programmed to obtain from the snapshot copy the data existing at the time of the restart point in the data blocks that have been changed in the primary file system since the restart point in column 7, lines 39-67.

14. As per claim 31, Leach et al. discloses wherein the secondary data storage system is programmed to activate the secondary file system for read/write access once all of the changes to the primary file system that have been transmitted to the secondary file system prior to the disruption have been written into the secondary file system in column 7, lines 39-67.

15. As per claim 32, Leach et al. discloses wherein the secondary data storage system is programmed to respond to the disruption by activating the secondary file system for read/write access, and the state of the primary file system at the restart point is the state of the secondary file system when the secondary file system is activated for read/write access in column 6, line 61 – column 7, line 5.

#### ***Claim Rejections - 35 USC § 103***

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

17. Claims 2,20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leach et al. in view of Martin et al. (USPN (USPN 6016501A). As per claims 2,20, Leach et al. fails to explicitly state the asynchronous remote copy of changes made to the primary file system being copied to the secondary file system includes using the Internet Protocol to transmit the changes made to the primary file system over a data network between the primary site and the secondary site.

Martin et al. discloses this limitation in column 9, lines 42-45.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the asynchronous remote copy of changes made to the primary file system being copied to the secondary file system includes using the Internet Protocol to transmit the changes made to the primary file system over a data network between the primary site and the secondary site. A person of ordinary skill in the art would have been motivated to have the asynchronous remote copy of changes made to the primary file system being copied to the secondary file system includes using the Internet Protocol to transmit the changes made to the primary file system over a data network between the primary site and the secondary site because TCP/IP, wherein the IP stands for Internet Protocol, is used to transfer data remotely from one storage system to another storage system.

#### ***Response to Arguments***

18. Applicant's arguments filed 06/13/06 have been fully considered but they are not persuasive for the claims listed below; however the arguments concerning claims 15 and 33 have been found to be persuasive.

Art Unit: 2113

Applicant argues on pages 21-22, under the Remarks/Arguments section, "With respect to claims 1 and 19, it is not see where Leach et al. discloses: 'making a snapshot copy of the secondary file system at the beginning of read/write access to the secondary file system, and ... when the primary site becomes operative ... using the snapshot copy to restore the primary file system to the state of the secondary file system existing when read/write access of the secondary file system was begun, and then writing into the primary file system the changes made to the secondary file system during the read/write access to the secondary file system ...' so that recovery can be achieved as further recited in the claim."

Examiner respectfully disagrees. The 'making a snapshot copy of the secondary file system...' is disclosed in column 7, lines 2-5. The snapshot is sent to the point-in-time storage that is also maintained by the secondary server. The 'using the snapshot copy to restore the primary file system...during the read/write access to the secondary file system...' is disclosed in column 7, lines 28-32, 50-57. As noted by Applicant, the fast re-synchronization is disclosed in column 6, lines 27-33. Although fast re-synchronization is described during normal operation, within the context of failing back to the primary server's database the changes made to the secondary server's database will be sent to the primary server's database since the primary server's database and the secondary server's database were synchronized within the time of failure to the same point. Otherwise, all the data on the secondary server's database will be sent to the primary server's database.

Applicant argues on pages 22 – 23, “Nor does Leach disclose or need use of a snapshot copy of the secondary file system (at the beginning of read-write access to the secondary file system) for restoring the primary file system...”

Examiner respectfully disagrees. The snapshot copy of the secondary file system is needed in order to know the place where the primary server’s database and the secondary server’s database were synched.

Applicant argues on pages 23 – 24, “With respect to claims 4 and 22, it is not seen where Leach restores the primary file system to a state prior to the disruption of the primary server by the primary site keeping a list of blocks that have been changed in the primary file system during read/write access to the primary file system, and using the snapshot copy to restore the primary file system to the state of the secondary file system existing when read/write access of the secondary file system was debug by accessing the list of blocks that have been changed in the primary file system during the read/write access to the primary file system to determine the blocks that have been changed in the primary file system since said prior state of the primary file system...”

Examiner respectfully disagrees. The list of blocks is kept by the point-in-time database, which keeps track of the changes made to the secondary server’s database, as is what is described in column 6, lines 44-56. The fast re-synchronization, within the context of failing back to the primary server’s database, the changes made to the secondary server’s database will be sent to the primary server’s database since the primary server’s database and the secondary server’s database were synchronized

within the time of failure to the same point. Otherwise, all the data on the secondary server's database will be sent to the primary server's database.

Applicant argues on pages 24 – 25, "With respect to applicants' claims 11 and 20, Leach is distinguished for the same reasons as given above for claim 4... These passages fail to discloses 'the primary file system being restored by determining from the list the data blocks that have been changed in the primary file system since the restart point' so that these blocks as they existed at the restart point are obtained from the secondary site and written into the primary file system..."

Examiner respectfully disagrees. Please see the arguments given for claims 4 and 22. The full resync is only done when necessary, not every time for a failback.

### *Conclusion*

19. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yolanda L. Wilson whose telephone number is (571) 272-3653. The examiner can normally be reached on M-F (7:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Beausoliel can be reached on (571) 272-3645. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Yolanda L Wilson  
Examiner  
Art Unit 2113

ylw

  
ROBERT BEAUSOLIEL  
PRIMARY PATENT EXAMINER  
TECHNOLOGY CENTER 2100